

at home, young willow wrens, ring dove or wood pigeon, young cuckoo and sedge warblers, hedgehog, young long-eared owls, gannet or solan goose, peewit or lapwing, sparrowhawk adding sticks to her nest, and the great tit or oxeye.

These handsome pictures provide the best possible tribute to the patient power of silent watching which the Brothers Kearton have developed during the last thirteen years in order to take advantage of opportunities of photographing animals in their natural surroundings.

Meteorologie und Klimatologie. By Prof. Dr. Wilhelm Trabert. Pp. 127; with 37 figures in the text. (Leipzig: Deuticke, 1905.) Price 5 marks.

In this little book, which forms part xiii. of Prof. Klär's "Die Erdkunde," the author attempts to outline the general principles of meteorology and their application to the study of climate in a single work. The meteorological elements, and the making and reducing of observations are first dealt with; next comes a section on atmospheric physics, the distribution of temperature and its variations, the circulation of the atmosphere, evaporation and condensation; and, finally, a section on weather and climate, which includes chapters on weather forecasting, the chief types of climate, and the climatic characteristics of the main land divisions of the globe.

Where so much is attempted in so small compass, there is, of course, constant risk of the treatment of parts of the subject becoming hopelessly inadequate, but Prof. Trabert has succeeded in avoiding this; the essential points are selected with extraordinary skill and presented with great clearness and conciseness. The omission of details of construction of instruments in part i. is especially satisfactory—most books on meteorology are overburdened with matter which is only wanted by practical observers—although in some cases more modern types of instrument might have been selected for illustration. The most successful section of the book is, in our opinion, that on atmospheric physics, in which the vertical distribution of temperature and the forms of isobaric surfaces are given the prominence they deserve, but do not always get.

Prof. Trabert's book is an excellent introduction to such classics as Hann's "Lehrbuch" and "Klimatologie," on which it is to a certain extent modelled, and we strongly commend it to elementary students and teachers.

A Popular Introduction to Astronomy. By the Rev. Alex. C. Henderson. Pp. 114. (Lerwick: T. and J. Manson, 1905.) Price 2s. 6d. net.

In this book there are three chapters, occupying sixty-three pages, and a series of thirteen "notes" which take up the remainder of the text. In chapter i. we find a very general, yet simple and instructive, description of the solar system, its probable origin, and the nature, appearance, dimensions, and distances of its various individual components. The explanations given are brief, but they are lucid, and the verbal illustrations are homely enough to appeal to the simplest minds. Chapter ii. deals with the apparent and real motions of the heavenly bodies, and here again the beginner should find no difficulty in grasping the fundamental ideas. Comets are discussed in chapter iii., which really consists of a description of Biela's famous comet and of the meteoritic genesis of these bodies.

The thirteen "notes" comprise a *mélange* apparently consisting of extracts and examples taken from the author's note-book, and it is rather difficult to see to what class of reader they will appeal. Portions

of them are certainly too erudite to suit real beginners, whilst they are not of the form to appeal to more advanced students. For example, the observing of the sunrise, combined with the consultation of a year book, would hardly answer to the description of an "accurate method" of determining time. Double stars, climatic variations, auroræ, eclipses, the lunar phases, and the zodiac are amongst other things dealt with in this section of the book. W. E. R.

Fragmenta Phytographiae Australiae occidentalis. By L. Diels and E. Pritzel. Pp. 608. (Leipzig: W. Engelmann, 1905.)

ALTHOUGH the floras of the different Australian colonies present a certain homogeneity that unites them into a definite "Flora Australiensis," there is also a considerable diversity between the floras of the eastern and western sides of the continent; that of the western half is distinguished by its richness, the singular modifications due to physical conditions and the large proportion of endemic species. Exclusive of the northern tropical region, the vascular plants of Western Australia, according to the evidence of the Government botanist, Mr. A. Morrison, do not fall far short of 4000 species, and most of these are found in the south-west. The writers of this volume travelled through this portion of the colony, and also penetrated into the interior from Geraldton to Cue, and as far as Ranowna and Menzies in the Coolgardie district. Phytogeographical limits are determined mainly by the rainfall, which reaches a maximum of 39 inches in the neighbourhood of Cape Leeuwin and diminishes rapidly to 9 inches at Shark Bay in the North and Southern Cross inland; the botanical provinces outlined in this volume have been mapped out in accordance with the rainfall.

The book is primarily a systematic compilation of the authors' collections, and although there are interesting notes on morphology and habit, the principal feature is the intimate knowledge which the authors display of the distribution of the various species. A revised arrangement of the Verbenaceæ is given, with analytical keys and numerous illustrations. Additions have been made to most of the typical genera, to mention only Acacia, Drosera, Hibbertia, and several of the Myrtaceæ. Taken in conjunction with Bentham's "Flora Australiensis," Baron von Mueller's "Fragmenta," and Spencer le Moore's notes, these "Fragmenta" provide the necessary data for a fairly complete flora of the colony. Dr. Diels proposes to write a continuous phytogeographical account later, wherein it may be expected that he will summarise the extraordinary modifications of the desert and other plants that are no less unique than those of the Egyptian desert flora which Volkens has so vividly portrayed.

Sporting Sketches. By E. Sandys. Pp. vii + 389; illustrated. (New York: The Macmillan Company; London: Macmillan and Co., Ltd., 1905.) Price 7s. 6d. net.

MR. EDWYN SANDYS is so well known to bird-lovers and sportsmen in general by such works as "Upland Game Birds" that any volume of a somewhat similar nature is almost sure of a hearty reception on the part of that section of the public to which it more specially appeals. In the volume before us the author has collected together a number of articles on sporting subjects which originally appeared in that excellent American sporting magazine *Outing*, and to these he has apparently added others which now see the light for the first time. Whether, however, new or old—and the author seemingly gives us no clue on this point—the articles have such a freshness about

them, and savour so strongly of the prairie or the river bank, that the lover of an outdoor life must be hard indeed to please if he cannot find matter of interest on almost any page to which he may happen to turn. The chapter-headings in some instances appear to be designed, at least to an English reader, to conceal rather than to elucidate the author's subjects, and we venture to think that some less recondite titles than "The Witchery of Wa-Wa" and "A Matter of Mascalouge" might have been selected without detriment to the picturesque style which the author apparently favours. But when once this little difficulty has been overcome, the reader will be able to find his way about the book, and select those sections in which he may be more specially interested.

The greater part of the book is devoted to fishing—both in sea and river—and feathered game shooting, and the English reader who desires to know the kind of sport afforded by ruffed grouse and "bob white" will find his requirements fully satisfied in the author's pages. Nor will the naturalist fail to find matter well worth his notice; and personally we have been specially interested in the account of the death-feigning instincts exhibited by the Carolina rail. Seemingly, when it thinks itself unable to escape, one of these birds suddenly "stiffens, topples over, and apparently expires. It may be taken up and examined for a considerable time without its betraying any signs of life. Place it among its dead fellows in the shooting-boat, and after a longer or shorter interval it may astonish its captor by either starting to run about, or by taking wing and fluttering away in the characteristic flight."

This is only one of many instances where strange habits of animals are recorded, and if not new they are always interesting and worth the re-telling. As a sample of the better class of sporting literature Mr. Sandys's work would be difficult to beat. R. L.

Ships and Shipping. By Commander R. Dowling. With a preface by Lieut. W. G. Ramsay Fairfax, R.N. Second Edition. Pp. xv+423. (London: A. Moring, Ltd., 1905.) Price 5s. net.

A very excellent little volume and a most handy addition to any shipping office. The naval information makes it also a very useful book to naval officers. One slight improvement would be useful—port-to-port distances round the coast of Great Britain and Europe; for example, London to Plymouth.

H. C. LOCKYER.

LETTERS TO THE EDITOR.

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The late Sir John Burdon-Sanderson.

THE account of the life of Sir John Burdon-Sanderson in NATURE of December 7 is so admirable that any addition to it may seem superfluous. Yet, as one who knew Burdon-Sanderson for more than thirty-seven years, and who owed more to him than language can well express, I shall be grateful if you will allow me to say a few words more about him. It seems to me that in one respect men may be likened to mountains. The Matterhorn rises sharply to a single peak, and there can be no doubt as to its summit. Monte Rosa has more than one summit, so nearly on a level that a stranger would be unable to say which is highest, and although each is higher than the Matterhorn, the enormous bulk of the mountain takes away from their apparent height and makes them less imposing.

NO. 1885, VOL. 73]

In the same way it is easy to say what the great work has been of any man who has distinguished himself in a limited subject, but when a man's work ranges over a wide sphere it is not so easy. The account of Sir John Burdon-Sanderson's life in last week's NATURE clearly shows the wide extent of his activity and the great number of epoch-making discoveries which he made. If a scientific man were asked which of these is the greatest, he would probably answer according to his own personal bias. One man would name his unique researches on motion in plants; another his discovery of the possibility of attenuating anthrax virus and thus producing immunity from the disease; a third his researches on circulation and respiration; and a fourth his work on muscle and nerve. But all these things, important as they are, each one being sufficient to make a man famous in a special department, were only isolated outgrowths of his great work, and did not constitute it. I believe that I am right in saying that Burdon-Sanderson's life-work may be defined in three short sentences:—(1) He revolutionised physiology and pathology in this country; (2) he found them consisting of book-learning and microscopic observation; (3) he left them experimental sciences.

When he first constructed a kymographion in 1867 by the aid of a tin-plate worker near the Middlesex Hospital, to which he was then attached, there was not, with the exception of a few specimens of Marey's sphygmograph, a single recording physiological instrument in use in the whole of this country. Now they are to be found in every physiological laboratory, and every student knows how to use them. When he began to work at pathology, it consisted chiefly in descriptions of the naked-eye and microscopical appearances of specimens of morbid anatomy. Now the action of disease-germs and of toxins and the reaction of the organism to them, the processes of disease and not its results, engage the chief attention of pathologists, and the knowledge which experiments on these processes have afforded regarding the means of producing immunity and of curing by antitoxic sera has lessened, and is daily lessening, the wholesale destruction of life by epidemic diseases.

How Burdon-Sanderson accomplished his great work by his researches, by his writings, by his example, and by his personal influence was well described in last week's NATURE, but I may perhaps be permitted to mention my own case as an example of what Burdon-Sanderson did for young men. I came to London knowing only one man, who from age and infirmity was unable to help me; but fortunately for me I had a letter of introduction to Burdon-Sanderson. Instead of merely saying a few civil things and then leaving me alone, as he might well have done, he invited me to his house, advised me as to my career, obtained for me a lectureship in the Middlesex Hospital, to which he was then attached, gave me the free use of his laboratory, afforded me facilities for both experimental and literary work, and, in short, laid for me the foundation of any success I may since have had, so that it is mainly to him that I owe it. How many there are whom he has treated as he did me I do not know, for he did not let his left hand know the good his right hand was doing; but I do know that at least two others, Dr. Ferrier, who has done such splendid work in physiology, and Dr. Klein, who has done the same in pathology, owe, like me, their first establishment in London to Burdon-Sanderson. Such personal help as this in enabling young men to pursue a scientific career must not only be regarded as an evidence of the kindness and benevolence of his character, but must be reckoned along with his researches, his writings, his example, and his personal influence as a means whereby he accomplished his great work of revolutionising physiology and pathology in this country.

LAUDER BRUNTON.

Nomenclature of Kinship; its Extension.

THE method I adopted in your columns, August 11, 1904, of briefly expressing kinship has proved most convenient; it has been used in a forthcoming volume by Mr. E. Schuster and myself on "Noteworthy Families." I write now to show that it admits of being particularised by the use of foot-figures, as in the following example, which